Increased Safety Enclosures

User's Manual

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Section 1
How to Use This Manual

Safety Considerations:

This chapter includes important information that must be read and understood by all persons installing, using, or maintaining this equipment. While this manual is designed to aid personnel in the correct and safe installation, operation, and maintenance of the systems described. Personnel must consider all actions and procedures for potential hazards or conditions that may not have been anticipated in the written procedures. If a procedure cannot be performed safely, it must not be performed until appropriate actions can be taken to ensure the safety of equipment and personnel. The procedures in this manual are not designed to replace or supersede required or common sense safety practices. All safety warnings listed in any documents applicable to equipment and parts used in or with the system described in this manual must be read and heeded before commencing work on any part of the system.

NOTE: ***Refer to all ATEX and IECEx certificates for any Special Conditions of Use. If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule of the certificate.***

NOTE: ***Review all material and safety information in this manual and install in accordance with this document and all other applicable ATEX and IECEx standards.***

WARNING: ***Failure to follow appropriate safety procedures or inappropriate use of the equipment described in this manual can lead to injury of personnel or equipment damage.***

WARNING – EXPLOSION HAZARD – ***Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.***

The following symbols are used throughout this manual to alert users to potential hazards or important information. ***Failure to heed the warnings and cautions listed herein can lead to injury and equipment damage.***

Document Label Definitions Used To Indicate Potential Hazards		
Symbol	**Label**	**Description**
	WARNING:	Consists of conditions, practices or procedures that must be observed to prevent personal injury and / or equipment damage.
	CAUTION:	Risk of electric shock or high temperature parts may result in injury if proper precautions are not taken.
	NOTE:	Emphasizes important or essential information.

Locating Information:

NOTE: ***In the interest of completeness, manuals and drawings included with the system may provide information pertaining to options not included with your equipment. Information in application notes supersedes general information in these documents. Information can be located in this manual using any of the following aids.***

1. Table of Contents
2. Getting Help

General Safety and Operating Information:

This section contains general safety and operating information applicable to electrical equipment installed within hazardous locations. This information must be understood by all persons installing, using, or maintaining the electrical equipment. This information is designed to aid personnel in safe installation, operation, and maintenance of the Increased Safety Enclosure. It is not designed to replace or limit appropriate safety measures applicable to work performed by personnel. Any additional safety and operating measures that are required must be determined by and followed by personnel performing work on the electrical equipment.

***WARNING:* Deviation from the specified instruction or procedure steps can result in injury to personnel, equipment malfunction and / or equipment damage.**

***WARNING:* Return unit to factory for any repairs or replacement of parts, customer not permitted. This will void all warranties and hazardous area certification(s).**

General Precautions:

Protective eyewear ***(glasses with side shields or goggles as appropriate*)** must be worn when servicing any part of electrical equipment. Hot components should be allowed to cool before servicing if possible. Other appropriate equipment or clothing must be used as required by the type of work performed. All applicable regulations and procedures must be followed for the work performed. ***Before*** beginning any work on the equipment, carefully consider all the potential hazards and ensure that appropriate measures are taken to prevent injury to personnel or equipment damage.

***CAUTION:* Electrical equipment components may be hot even when power is not applied. Take appropriate precautions to prevent injury from contact with hot items.**

***CAUTION:* Applicable permits must be obtained and appropriate precautions must be taken to prevent possible injury to personnel or equipment damage when installing or maintaining this equipment.**

Electrical Power:

Appropriate precautions must be taken to prevent sparks that may ignite combustible materials that may be present in the Increased Safety Enclosure environment. Precautions must also be taken to prevent electrical shock if the Increased Safety Enclosure is opened. Power circuit breakers and wiring must be sized properly for the required current. All wiring installations must meet applicable electrical codes.

System Location:

The Increased Safety Enclosure must not be installed in an area classification for which it is not rated and must be protected from temperature extremes and potentially high vibration. The Increased Safety Enclosure must be attached securely and appropriately at its final installation.

Section 2
Specifications

Certifications & Standards
Certified for installation and use in ATEX and IECEx for
II 2 G Ex e IIC Gb IP66
For Zone 1 / Category 2 gas hazardous areas
II 2 D Ex tb IIIC Db IP66
For Zone 1 / Category 2 dust hazardous areas
ATEX Certificate Number = ITS 14 ATEX 37951U
IECEx Certificate Number = IECEx ITS 14.0004U
Standards = IEC / EN 60079-0, IEC / EN 60079-7 and IEC / EN 60079-31

Environmental Conditions	
Operating Temperature Range	- 40°F to 176°F (- 40°C to 80°C)
Used and Mounted	For Indoor and Outdoor Use
Ingress Protection	IP66

Features
Custom size enclosures as required for customer application
Holes can be punched for cable glands, windows, purge systems and any other component per customer's application requirements
Proprietary hinge design that allows clamping of door on all sides for maximum ingress protection with fasteners that allows door to be removed as needed
Ground stud on door and box and an external earth ground stud
Continuous silicone door gasket

Options
Welded on external mounting feet
Padlock hasp and staple
Internal mounting plates

Enclosure Material Specifications
Type 304 stainless steel with brushed finish – enclosure, door and internal mounting plate gage thickness depending on overall enclosure dimensions
Type 316L stainless steel with brushed finish – enclosure, door and internal mounting plate gage thickness depending on overall enclosure dimensions
Mild carbon steel, powder coated RAL7035 light gray finish – enclosure, door and internal mounting plate gage thickness depending on overall enclosure dimensions
Type 5052 H-32 aluminum either powder coated RAL7035 light gray or anodized finish – enclosure, door and internal mounting plate gage thickness depending on overall enclosure dimensions
Type 316 stainless steel - grounding earth stud and hardware
All seams continuous welded and ground smooth before finish is applied

Section 3

Installation

WARNING: ***Before attempting to install any Increased Safety Enclosure; review all the material and all safety information in this manual and all other applicable documents.***

WARNING: ***Applicable permits must be obtained and appropriate precautions must be taken to prevent possible injury to personnel or equipment damage when installing any Increased Safety Enclosure.***

NOTE: ***Refer to all ATEX and IECEx certificates for any Special Conditions of Use. If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule of the certificate.***

NOTE: ***Review all material and safety information in this manual and install in accordance with this document and all other applicable ATEX and IECEx standards.***

NOTE: ***Purge Solutions, Inc. is NOT responsible for any misuse or improper installation of product, assumes no liability for special or consequential damages caused by use or misuse or improper installation of its products sold and assumes no liability for injury from use or misuse or improper installation of its products or attached products.***

Guide to Cable Gland Increase Safety Enclosure Side Entry Positions
Do not put cable gland holes closer than 1.63 inches (41.4 mm) from any edge of enclosure wall
Prior to putting holes in the enclosure wall; verify that the selected cable gland will have sufficient clearance for the sealing washer and lock nut
Maximum hole diameter is major thread diameter of cable gland plus 0.03 inches (0.7 mm)
Minimum material maintained between M16 through M32 cable glands = 0.59 inches (15.0 mm)
Minimum material maintained between M35 through M75 cable glands = 0.79 inches (20.0 mm)
Minimum material maintained between M75 through M100 cable glands = 1.38 inches (35.0 mm)
If a combination of cable gland sizes are to be installed; always maintain the larger cable gland minimum material distance between them

Guide to Increased Safety Enclosure Installation
Visually inspect gasket, clamps and hinges after each opening of enclosure
Enclosure 5/16-18 x 1.5 long grounding stud shall be connected by ring lug at the end of earth grounding cable; refer to local codes for proper selection of electrical hardware (Refer to Figure 2)
Internal body grounding terminals shall be used for internal equipment grounding connections; refer to local codes for any additional requirements
The number and arrangement of terminal blocks or other wiring terminals shall be determined in the end use investigation
All enclosure openings must be filled by equipment / components; i.e. plugs, breathers are certified Ex e IIC Gb IP66 for gas hazardous areas and Ex tb IIIC Db IP66 for dust hazardous areas equal or better
Select cable glands with Ex e IIC Gb IP66 for gas hazardous areas and Ex tb IIIC Db IP66 for dust hazardous areas equal or better certification and application
Make sure that all cable glands accessories; i.e. lock nuts, sealing washers are included for through hole installation
Install all cable glands, equipment and components to manufacturer’s instructions
Tighten all door clamps to a torque level of 30 – 35 in lbs. (3.4 – 3.9 Nm)

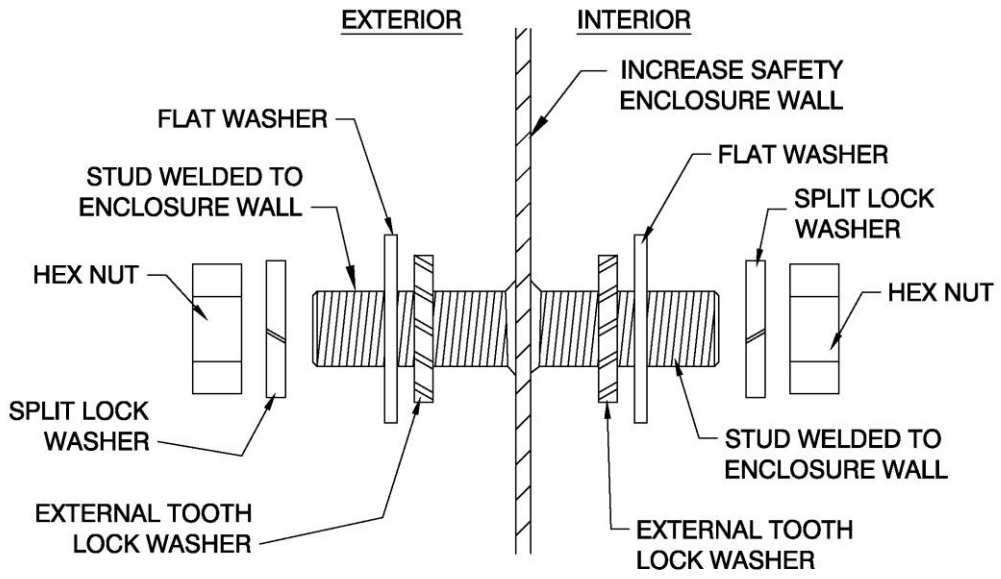
Additional Instructions to Minimize the Risk of Electrostatic Discharge for Fixed Installations Powder Coated and Anodized Increased Safety Enclosures
Test area to make certain no explosive atmosphere is present prior to contact or cleaning of enclosure
Make certain enclosure is properly grounded, external earth ground connection is properly made and are properly bonded
For painted and anodized enclosure surfaces; avoid friction with surfaces and only clean with wet cloth moistened with de-ionized water
Avoid contact with painted and anodized enclosure surfaces in low relative humidity and where possible increase environmental humidity

WARNING: ***Failure to heed the following information may lead to injury of personnel or equipment damage.***

Mounting:

Review all of the material in this manual prior to installing any Increased Safety Enclosure. If you have any questions, please contact your local Purge Solutions, Inc. representative or the factory (Refer to Getting Help, page 12).

WARNING: ***This apparatus must be earth grounded!***
Refer to Figure 1 for proper ground connection details.



DETAIL OF 5/16-18 EARTH GROUND CONNECTION

Figure 1

Section 4

Options

Vortex Cabinet Cooler Systems:

For applications where thermal management of electrical cabinets and control panels are required; Purge Solutions, Inc. offers Vortex Cabinet Cooler Systems, which provide cooling capacities for your application and maintain an IP66 rating for installation and use in hazardous area. Contact your local Purge Solutions, Inc. representative or the factory for sizing of system and installation information.

NOTE: ***There are special modifications and sizing requirements to be made before Vortex Cabinet Coolers are able to be installed and used in a hazardous area.***

Continuous Operation Vortex Cabinet Cooler System *(Without Thermostat Control)* Model Number Matrix

Cooling Capacity	Supply Pressure	Air Consumption	Model Number
900 Btu/hr (264 W)	100 psig (6.9 bar)	15 SCFM (425 LPM)	PSO-CO0900
1500 Btu/hr (440 W)	100 psig (6.9 bar)	25 SCFM (708 LPM)	PSO-CO1500
2500 Btu/hr (732 W)	100 psig (6.9 bar)	35 SCFM (991 LPM)	PSO-CO2500
5000 Btu/hr (1465 W)	100 psig (6.9 bar)	70 SCFM (1981 LPM)	PSO-CO5000

Thermostat Controlled Vortex Cabinet Cooler System Model Number Matrix

Cooling Capacity	Supply Pressure	Air Consumption	Model Number
900 Btu/hr (264 W)	100 psig (6.9 bar)	15 SCFM (425 LPM)	PSO-TC0900
1500 Btu/hr (440 W)	100 psig (6.9 bar)	25 SCFM (708 LPM)	PSO-TC1500
2500 Btu/hr (732 W)	100 psig (6.9 bar)	35 SCFM (991 LPM)	PSO-TC2500
5000 Btu/hr (1465 W)	100 psig (6.9 bar)	70 SCFM (1981 LPM)	PSO-TC5000

Vortex Cabinet Cooler Systems Utility Requirements & Environmental Conditions	
Instrument Grade Air Supply Pressure to Vortex Cabinet Coolers	100 psig (6.9 bar) ***(Suggested for optimal cooling of enclosure)***
Vortex Cabinet Cooler Air Supply Quality	Water and oil-free, - 40°F (- 40°C) dew point, particles ≤ 5µ, ISA grade hydrocarbon free
Operating Temperature Range	- 40°F to 176°F (- 40°C to 80°C)
Used and Mounted	For Indoor and Outdoor Use

Increased Safety Window Kits:

For increased safety enclosure that require viewing of components mounted within the enclosure Purge Solutions, Inc. offers Increased Safety Window Kits in 5 different window viewing sizes with bezels available in anodized aluminum or 316 stainless steel.

Increased Safety Window Kits Model Number Matrix		
Window Viewing Size	**Bezel Material**	**Model Number**
0.98 (24.9) x 1.88 (47.8)	Anodized Aluminum	PSO-1/32DINW-A
1.88 (47.8) x 1.88 (47.8)	Anodized Aluminum	PSO-1/16DINW-A
1.88 (47.8) x 3.76 (95.5)	Anodized Aluminum	PSO-1/8DINW-A
3.76 (95.5) x 3.76 (95.5)	Anodized Aluminum	PSO-1/4DINW-A
7.25 (184.2) x 10.00 (254.00)	Anodized Aluminum	PSO-XLW-A
0.98 (24.9) x 1.88 (47.8)	316 Stainless Steel	PSO-1/32DINW-S
1.88 (47.8) x 1.88 (47.8)	316 Stainless Steel	PSO-1/16DINW-S
1.88 (47.8) x 3.76 (95.5)	316 Stainless Steel	PSO-1/8DINW-S
3.76 (95.5) x 3.76 (95.5)	316 Stainless Steel	PSO-1/4DINW-S
7.25 (184.2) x 10.00 (254.00)	316 Stainless Steel	PSO-XLW-S

Increased Safety Window Kits Environmental Conditions	
Operating Temperature Range	- 40°F to 176°F (- 40°C to 80°C)
Used and Mounted	For Indoor and Outdoor Use IP66

Section 5
Getting Help

Answers to many questions concerning your Increased Safety Enclosure or any of our other products we offer can be found in this manual. If a problem or question is encountered that is not covered in the documentation provided, assistance is available Monday through Friday (except holidays), from 8 a.m. to 5 p.m. United States central time. To obtain assistance, please call Purge Solutions, Inc. at **832-368-7166**.

For assistance during times other than normal business hours, consult our World Wide Web Internet site at **http://www.purgesolutions.com**. This site includes equipment information, news releases, and other information. E-mail can be sent to **info@purgesolutions.com**.

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